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CALCULUS.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

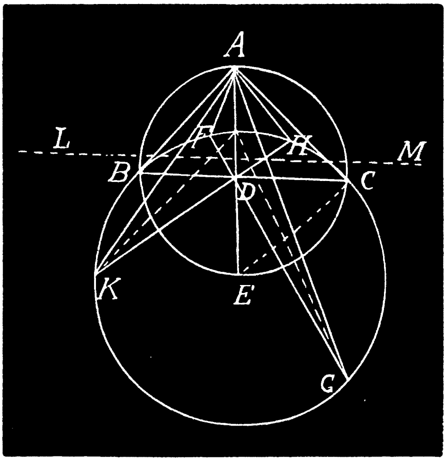
SOLUTIONS TO PROBLEMS.

3. **Proposed by H. C. WHITAKER, B. S., M. E., Professor of Mathematics, Manual Training School, Philadelphia, Pennsylvania..**

Given: the product of two sides of a triangle is 6000 the length of the bisector of the included angle is 60. Required: What is the maximum area, and what the greatest length of the third side.

II **A Geometrical construction by W. B. RIEGNER Philadelphia, Pennsylvania.**

Make $AD=60$, $AE=\frac{6000}{60}=1000$, $EC=\sqrt{[DE^2+(AD\times DE)]}$. Any triangle with apex A and the third side a chord through D fulfills the conditions. No other triangle can. The centre of the circumscribing circle of each of the triangles is on line LM. The bisectors of each triangle rest on arc BFC. The area swept over by the triangle, the bisector remaining fixed is 13921. Area$=1200\sqrt{6}$, 3rd side$=40\sqrt{10}$.



6. **Proposed by O. S. KIBLER, Superintendent of Schools, West Middleburg, Ohio.**

A string is wound spirally twenty times around a cylinder 20 feet high and 2 feet in diameter. Through what distance will a dove fly in unwinding the string keeping it tense at all times (1) flying in the same plane and (2) not flying in the same plane?

II. **Solution by G. B. M. ZERR, Principal of Schools, Staunton, Virginia.**

Let $ABCD$....be a prism of n sides inscribed in the cylinder $ABCDE$ of radius $OA=r$.

Then $\angle AOB=\angle ABF=\angle BCG=\&c=\frac{2\pi}{n}$ side $AB=2r\sin\frac{\pi}{n}$.